

SEQUENCE LISTING

<110> Rangel-Aldao, Rafael
Bravo, Adriana
Sanchez, Beatriz
Galindo-Castro, Ivan

<120> Malt Beverage Having Stabilized Flavor and Methods of Production
Thereof

<130> 1390.0070003

<140>

<141> 1998-09-09

<150> 60/058,398

<151> 1997-09-09

<160> 6

<170> PatentIn Ver. 2.0

<210> 1

<211> 400

<212> PRT

<213> Saccharomyces carlsbergensis

<400> 1

Met	Ser	Phe	Val	Lys	Asp	Phe	Lys	Pro	Gln	Ala	Leu	Gly	Asp	Thr	Asn	
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Leu	Phe	Lys	Pro	Ile	Lys	Ile	Gly	Asn	Asn	Glu	Leu	Leu	His	Arg	Ala	
			20					25					30			
Val	Ile	Pro	Pro	Leu	Thr	Arg	Met	Arg	Ala	Leu	His	Pro	Gly	Asn	Ile	
		35					40					45				
Pro	Asn	Arg	Asp	Trp	Ala	Val	Glu	Tyr	Tyr	Thr	Gln	Arg	Ala	Gln	Arg	
	50				55						60					
Pro	Gly	Thr	Met	Ile	Ile	Thr	Glu	Gly	Ala	Phe	Ile	Ser	Pro	Gln	Ala	
65				70						75				80		
Gly	Gly	Tyr	Asp	Asn	Ala	Pro	Gly	Val	Trp	Ser	Glu	Glu	Gln	Met	Val	
			85					90					95			
Glu	Trp	Thr	Lys	Ile	Phe	Asn	Ala	Ile	His	Glu	Lys	Lys	Ser	Phe	Val	
		100						105					110			
Trp	Val	Gln	Leu	Trp	Val	Leu	Gly	Trp	Ala	Ala	Phe	Pro	Asp	Asn	Leu	
	115						120					125				
Ala	Arg	Asp	Gly	Leu	Arg	Tyr	Asp	Ser	Ala	Ser	Asp	Asn	Val	Phe	Met	
	130					135					140					
Asp	Ala	Glu	Gln	Glu	Ala	Lys	Ala	Lys	Lys	Ala	Asn	Asn	Pro	Gln	His	
145				150						155					160	

Ser Leu Thr Lys Asp Glu Ile Lys Gln Tyr Ile Lys Glu Tyr Val Gln
165 170 175
Ala Ala Lys Asn Ser Ile Ala Ala Gly Ala Asp Gly Val Glu Ile His
180 185 190
Ser Ala Asn Gly Tyr Leu Leu Asn Gln Phe Leu Asp Pro His Ser Asn
195 200 205
Thr Arg Thr Asp Glu Tyr Gly Gly Ser Ile Glu Asn Arg Ala Arg Phe
210 215 220
Thr Leu Glu Val Val Asp Ala Leu Val Glu Ala Ile Gly His Glu Lys
225 230 235 240
Val Gly Leu Arg Leu Ser Pro Tyr Gly Val Phe Asn Ser Met Ser Gly
245 250 255
Gly Ala Glu Thr Gly Ile Val Ala Gln Tyr Ala Tyr Val Ala Gly Glu
260 265 270
Leu Glu Lys Arg Ala Lys Ala Gly Lys Arg Leu Ala Phe Val His Leu
275 280 285
Val Glu Pro Arg Val Thr Asn Pro Phe Leu Thr Glu Gly Glu Gly Glu
290 295 300
Tyr Glu Gly Gly Ser Asn Asp Phe Val Tyr Ser Ile Trp Lys Gly Pro
305 310 315 320
Val Ile Arg Ala Gly Asn Phe Ala Leu His Pro Glu Val Val Arg Glu
325 330 335
Glu Val Lys Asp Lys Arg Thr Leu Ile Gly Tyr Gly Arg Phe Phe Ile
340 345 350
Ser Asn Pro Asp Leu Val Asp Arg Leu Glu Lys Gly Leu Pro Leu Asn
355 360 365
Lys Tyr Asp Arg Asp Thr Phe Tyr Gln Met Ser Ala Trp Gly Tyr Ile
370 375 380
Asp Tyr Pro Thr Tyr Glu Ala Leu Lys Leu Gly Trp Asp Lys Lys
385 390 395 400

<210> 2

<211> 400

<212> PRT

<213> *Saccharomyces carlsbergensis*

<400> 2

Met Pro Phe Val Lys Asp Phe Lys Pro Gln Ala Leu Gly Asp Thr Asn
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Leu Phe Lys Pro Ile Lys Ile Gly Asn Asn Glu Leu Leu His Arg Ala
20 25 30
Val Ile Pro Pro Leu Thr Arg Met Arg Ala Gln His Pro Gly Asn Ile
35 40 45
Pro Asn Arg Asp Trp Ala Val Glu Tyr Tyr Ala Gln Arg Ala Gln Arg
50 55 60
Pro Gly Thr Leu Ile Ile Thr Glu Gly Thr Phe Pro Ser Pro Gln Ser
65 70 75 80
Gly Gly Tyr Asp Asn Ala Pro Gly Ile Trp Ser Glu Glu Gln Ile Lys
85 90 95
Glu Trp Thr Lys Ile Phe Lys Ala Ile His Glu Asn Lys Ser Phe Ala
100 105 110
Trp Val Gln Leu Trp Val Leu Gly Trp Ala Ala Phe Pro Asp Thr Leu

115	120	125
Ala Arg Asp Gly Leu Arg Tyr Asp Ser Ala Ser Asp Asn Val Tyr Met		
130	135	140
Asn Ala Glu Gln Glu Glu Lys Ala Lys Lys Ala Asn Asn Pro Gln His		
145	150	155
Ser Ile Thr Lys Asp Glu Ile Lys Gln Tyr Val Lys Glu Tyr Val Gln		160
165	170	175
Ala Ala Lys Asn Ser Ile Ala Ala Gly Ala Asp Gly Val Glu Ile His		
180	185	190
Ser Ala Asn Gly Tyr Leu Leu Asn Gln Phe Leu Asp Pro His Ser Asn		
195	200	205
Asn Arg Thr Asp Glu Tyr Gly Gly Ser Ile Glu Asn Arg Ala Arg Phe		
210	215	220
Thr Leu Glu Val Val Asp Ala Val Val Asp Ala Ile Gly Pro Glu Lys		
225	230	235
Val Gly Leu Arg Leu Ser Pro Tyr Gly Val Phe Asn Ser Met Ser Gly		240
245	250	255
Gly Ala Glu Thr Gly Ile Val Ala Gln Tyr Ala Tyr Val Leu Gly Glu		
260	265	270
Leu Glu Arg Arg Ala Lys Ala Gly Lys Arg Leu Ala Phe Val His Leu		
275	280	285
Val Glu Pro Arg Val Thr Asn Pro Phe Leu Thr Glu Gly Glu Gly Glu		
290	295	300
Tyr Asn Gly Gly Ser Asn Lys Phe Ala Tyr Ser Ile Trp Lys Gly Pro		
305	310	315
Ile Ile Arg Ala Gly Asn Phe Ala Leu His Pro Glu Val Val Arg Glu		
325	330	335
Glu Val Lys Asp Pro Arg Thr Leu Ile Gly Tyr Gly Arg Phe Phe Ile		
340	345	350
Ser Asn Pro Asp Leu Val Asp Arg Leu Glu Lys Gly Leu Pro Leu Asn		
355	360	365
Lys Tyr Asp Arg Asp Thr Phe Tyr Lys Met Ser Ala Glu Gly Tyr Ile		
370	375	380
Asp Tyr Pro Thr Tyr Glu Glu Ala Leu Lys Leu Gly Trp Asp Lys Asn		
385	390	395
		400

<210> 3

<211> 400

<212> PRT

<213> Saccharomyces carlsbergensis

<400> 3

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Leu Phe Glu Pro Ile Lys Ile Gly Asn Thr Gln Leu Ala His Arg Ala	10
20	25
Val Met Pro Pro Leu Thr Arg Met Arg Ala Thr His Pro Gly Asn Ile	30
35	40
Pro Asn Lys Glu Trp Ala Ala Val Tyr Tyr Gly Gln Arg Ala Gln Arg	45
50	55
	60

Pro	Gly	Thr	Met	Ile	Ile	Thr	Glu	Gly	Thr	Phe	Ile	Ser	Pro	Gln	Ala
65				70					75						80
Gly	Gly	Tyr	Asp	Asn	Ala	Pro	Gly	Ile	Trp	Ser	Asp	Glu	Gln	Val	Ala
			85					90					95		
Glu	Trp	Lys	Asn	Ile	Phe	Leu	Ala	Ile	His	Asp	Cys	Gln	Ser	Phe	Ala
			100					105					110		
Trp	Val	Gln	Leu	Trp	Ser	Leu	Gly	Trp	Ala	Ser	Phe	Pro	Asp	Val	Leu
		115					120					125			
Ala	Arg	Asp	Gly	Leu	Arg	Tyr	Asp	Cys	Ala	Ser	Asp	Arg	Val	Tyr	Met
	130					135					140				
Asn	Ala	Thr	Leu	Gln	Glu	Lys	Ala	Lys	Asp	Ala	Asn	Asn	Leu	Glu	His
145					150				155						160
Ser	Leu	Thr	Lys	Asp	Asp	Ile	Lys	Gln	Tyr	Ile	Lys	Asp	Tyr	Ile	His
			165					170						175	
Ala	Ala	Lys	Asn	Ser	Ile	Ala	Ala	Gly	Ala	Asp	Gly	Val	Glu	Ile	His
			180					185					190		
Ser	Ala	Asn	Gly	Tyr	Leu	Leu	Asn	Gln	Phe	Leu	Asp	Pro	His	Ser	Asn
		195					200					205			
Lys	Arg	Thr	Asp	Glu	Tyr	Gly	Gly	Thr	Ile	Glu	Asn	Arg	Ala	Arg	Phe
	210					215				220					
Thr	Leu	Glu	Val	Val	Asp	Ala	Leu	Ile	Glu	Thr	Ile	Gly	Pro	Glu	Arg
225					230				235						240
Val	Gly	Leu	Arg	Leu	Ser	Pro	Tyr	Gly	Thr	Phe	Asn	Ser	Met	Ser	Gly
			245					250						255	
Gly	Ala	Glu	Pro	Gly	Ile	Ile	Ala	Gln	Tyr	Ser	Tyr	Val	Leu	Gly	Glu
			260					265					270		
Leu	Glu	Lys	Arg	Ala	Lys	Ala	Gly	Lys	Arg	Leu	Ala	Phe	Val	His	Leu
		275					280					285			
Val	Glu	Pro	Arg	Val	Thr	Asp	Pro	Ser	Leu	Val	Glu	Gly	Glu	Gly	Glu
	290					295				300					
Tyr	Ser	Glu	Gly	Thr	Asn	Asp	Phe	Ala	Tyr	Ser	Ile	Trp	Lys	Gly	Pro
305					310				315						320
Ile	Ile	Arg	Ala	Gly	Asn	Tyr	Ala	Leu	His	Pro	Glu	Val	Val	Arg	Glu
			325					330						335	
Gln	Val	Lys	Asp	Pro	Arg	Thr	Leu	Ile	Gly	Tyr	Gly	Arg	Phe	Phe	Ile
			340					345					350		
Ser	Asn	Pro	Asp	Leu	Val	Tyr	Arg	Leu	Glu	Glu	Gly	Leu	Pro	Leu	Asn
		355					360					365			
Lys	Tyr	Asp	Arg	Ser	Thr	Phe	Tyr	Thr	Met	Ser	Ala	Glu	Gly	Tyr	Thr
	370					375					380				
Asp	Tyr	Pro	Thr	Tyr	Glu	Ala	Val	Asp	Leu	Gly	Trp	Asn	Lys	Asn	
385					390				395					400	

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<211> 30

<212> PRT

<213> *Saccharomyces carlsbergensis*

<400> 4

Met	Pro	Phe	Val	Lys	Asp	Phe	Lys	Pro	Gln	Ala	Leu	Gly	Asp	Thr	Asn
1			5					10					15		
Leu	Phe	Lys	Pro	Ile	Lys	Ile	Gly	Asn	Asn	Glu	Leu	Leu	His		

25